**Competency Cross-Reference - Auto Mechanics Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Directions:** Evaluate the student by recording the appropriate number to indicate the degree of competency. The rating for each task should reflect employability readiness rather than the grades given in class.

**Auto ASE Requirements:** Auto ASE 2022 Standard requirements are P-1: 90%, P-2: 75%, and P-3: 50%.

|  |  |
| --- | --- |
| **Rating Scale (0-6):** | |
| 0 | **No Exposure -** no experience /knowledge in this area; program / course did not provide instruction in this area |
| 1 | **Unsuccessful Attempt -** unable to meet knowledge or performance criteria and /or required significant assistance |
| 2 | **Partial Demonstration** - met some of the knowledge or performance criteria with or without minor assistance |
| 3 | **Knowledge Demonstrated** - met knowledge criteria without assistance at least once |
| 4 | **Performance Demonstrated** - met performance criteria without assistance at least once |
| 5 | **Repetitive Demonstration** - met performance and /or knowledge criteria without assistance on multiple occasions |
| 6 | **Mastered** - successfully applied knowledge or skills in this area to solve related problems independently |
| N /A | Not observed or does not apply |

| ***Score*** | ***No.*** | ***Competency*** | ***Academic / Technical Standards***  ***STANDARDS LINK:*** [***CLICK HERE***](https://docs.google.com/spreadsheets/d/1kpiUtAXUoPi37KTmx3dzH4nDxqv-RObW/edit?usp=sharing&ouid=101588451119829974699&rtpof=true&sd=true) | ***SkillsUSA Framework*** | ***Instructional Strategy*** | ***Assessment(s)*** |
| --- | --- | --- | --- | --- | --- | --- |
| **Foundational Tasks** *(to be integrated throughout the program)* | | | |  |  |  |
|  | **Safety** |  |  |  |  |  |
|  | 1 | Identify general shop safety rules and procedures. | RI.1.A&D, RI.3.D | **Personal Skills:** Integrity, Work Ethic, Professionalism, Responsibility, Self-Motivation  **Workplace Skills:** Communication, Decision Making, Teamwork, Planning, Organizing & Management  **Technical Skills:** Job-Specific Skills, Safety & Health | *Each of these tasks are required to be included at all levels of accreditation.*  **General Shop and Tool Safety:**  Demonstrate how to use all tools and equipment  Job Sheet / Task Lists for tools and equipment | **Program Safety exam with score of 100%**  - all procedures and policies  - tool and equipment knowledge and safety. **Recommended:**  Knowledge and understanding used for instructional activities and assessments.  - Use of SP2 and/or CCAR - ALI Lift Training and Certification - Tool and Shop Safety Evaluation (end of lesson and randomly throughout year) **Classroom and Lab:**  - Pre and Post tests - Shop Performance evaluation. |
|  | 2 | Utilize safe procedures for handling tools and equipment. | RI.1.A&D, RI.3.D |
|  | 3 | Identify and use proper placement of floor jacks and jack stands. | RI.1.A&D, RI.3.D |
|  | 4 | Identify and use proper procedures for safe lift operation. | RI.1.A&D, RI.3.D |
|  | 5 | Utilize proper ventilation procedures for working within the lab/shop area. | RI.1.A&D, RI.3.D |
|  | 6 | Identify marked safety areas. | RI.1.A&D, RI.3.D |
|  | 7 | Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment. | RI.1.A&D, RI.3.D |
|  | 8 | Identify the location and use of eye wash stations. | RI.1.A&D, RI.3.D |
|  | 9 | Identify the location of the posted evacuation routes. | RI.1.A&D, RI.3.D |
|  | 10 | Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities. | RI.1.A&D, RI.3.D |
|  | 11 | Identify and wear appropriate clothing for lab/shop activities. | RI.1.A&D, RI.3.D |
|  | 12 | Secure hair and jewelry for lab/shop activities. |  |
|  | 13 | Identify vehicle systems which pose a safety hazard during service such as: supplemental restraint systems (SRS), electronic brake control systems, stop/start systems, and remote start systems. | RI.1.A&D, RI.3.D |
|  | 14 | Identify vehicle systems which pose a safety hazard during service due to high voltage such as: hybrid/electric drivetrain, lighting systems, ignition systems, A/C systems, injection systems, etc. | RI.1.A&D, RI.3.D |
|  | 15 | Locate and demonstrate knowledge of safety data sheets (SDS). | A2.DS.A.7 |
|  | **Tools & Equipment** | |  |  |  |  |
|  | 1 | Identify tools and their usage in automotive applications. | RI.3.D | **Personal Skills:** Integrity, Work Ethic, Professionalism, Responsibility  **Workplace Skills:** Decision Making, Planning, Organizing & Management **Technical Skills:** Job-Specific Skills, Safety & Health | *Each of these tasks are required to be included at all levels of accreditation.*  **General Shop and Tool Safety:**  Demonstrate how to use all tools and equipment  Job Sheet / Task Lists for tools and equipment | **Program Safety exam with score of 100%**  - all procedures and policies  - tool and equipment knowledge and safety. **Recommended:** Knowledge and understanding used for instructional activities and assessments.  - Use of SP2 and/or CCAR - ALI Lift Training and Certification - Tool and Shop Safety Evaluation (end of lesson and randomly throughout year) **Classroom and Lab:**  - Pre and Post tests - Shop Performance evaluation. |
|  | 2 | Identify standard and metric designation. | RI.3.D, A1.NQ.B.3-5 |
|  | 3 | Demonstrate safe handling and use of appropriate tools. | RI.1.A&D; SL.2 |
|  | 4 | Demonstrate proper cleaning, storage, and maintenance of tools and equipment. | RI.1.A&D; SL.2 |
|  | 5 | Demonstrate proper use of precision measuring tools (e.g., micrometer, dial-indicator, dial-caliper). | RI.1.A&D; SL.2, A1.NQ.B.3-5 |
|  | 6 | Perform common fastener and thread repair, including removing broken bolts, restoring internal and external threads, and repairing internal threads with a thread insert. |  |
|  | **Preparing Vehicle for Service** | |  |  |  |  |
|  | 1 | Identify information needed and the service requested on a repair order. | RI.1.A-D; RI.3.D; SL.2 | **Personal Skills:** Integrity, Work Ethic, Professionalism, Responsibility **Workplace Skills:** Communication, Decision Making, Planning, Organizing & Management  **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills, Safety & Health, Service Orientation | *Each of these tasks are required to be included at all levels of accreditation.*  **Classroom and Lab:**  - Introduce (Instructor) - Lecture, Presentation, Videos - Worksheets - Concepts and Terms   - Demonstrate (Instructor)  - Perform (Student)  - Job Sheet / Task Lists - Use of ASE and/or industry job task resources | **Recommended:**  Knowledge and understanding used for instructional activities and assessments - Use of Automotive Service Information (Alldata, Shopkey, Identifix, and/or Motologic, other industry service information program)  **Classroom and Lab**: - Pre and Post tests - Shop Performance evaluation |
|  | 2 | Identify purpose and demonstrate proper use of vehicle protection such as: fender covers, mats, seat, and steering wheel covers. | RI.1.A-D,RI.3.D; SL.2 |
|  | 3 | Perform a vehicle walk-around inspection; identify and document existing vehicle conditions such as body damage, paint damage, windshield damage. | RI.1.C, W.1.A, W.3.A |
|  | 4 | Perform a vehicle multi-point inspection and complete a vehicle inspection report. | RI.1.C, W.1.A, W.3.A |
|  | 5 | Demonstrate use of the four C’s (concern, cause, correction, and confirm). | RI.1.B |
|  | 6 | Create a plan of action for each specific service or diagnostic situation. | W.1.A, W.3.A |
|  | 7 | Review vehicle service history. | RI.3.D |
|  | 8 | Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. | W.1.A, W.2.A, W.3.A |
|  | **Preparing Vehicle for Customer** | |  |  |  |  |
|  | 1 | Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.). |  | **Personal Skills:** Integrity, Work Ethic, Professionalism, Responsibility  **Technical Skills:** Job-Specific Skills, Service Orientation | *Each of these tasks are required to be included at all levels of accreditation.*  **Classroom and Lab:**  - Introduce (Instructor) - Lecture, Presentation, Videos - Worksheets - Concepts and Terms   - Demonstrate (Instructor)  - Perform (Student)  - Job Sheet / Task Lists - Use of ASE and/or industry job task resources | **Recommended:**  Knowledge and understanding used for instructional activities and assessments - Use of Automotive Service Information (Alldata, Shopkey, Identifix, and/or Motologic, other industry service information program)  **Classroom and Lab**: - Pre and Post tests - Shop Performance evaluation |
| **I - Engine Repair** | | |  |  |  |  |
| **A** | **General** | |  |  | **Classroom and Lab:**  Introduce (Instructor)  - Lecture, Presentation, Videos  - Worksheets  - Concepts and Terms   Demonstrate (Instructor)  Perform (Student)  - Job Sheet / Task Lists  - Use of ASE and/or industry job task resources    **For ASE Tasks (Tech Standard):** - Combine (tech standards) for Class instruction and for Lab activities - Job Sheet / Task Lists which includes ASE Tech standards and cover unit tasks - Apply the use of manufacture vehicle inspection checklists or other industry used practices   **Shop/Lab Setup:** - Different stations cover different tasks - Students divided in groups of 3 (ideal) and rotate stations - Use of trainers, related components and vehicles (not live vehicle repair during instruction) | **Recommended:**  Knowledge and understanding used for instructional activities and assessments - Use of Automotive Service Information (Alldata, Shopkey, Identifix, and/or Motologic, other industry service information program)  **Classroom and Lab**: - Pre and Post tests - Student ASE Tests (can be done twice a year) - Industry Tests or certifications-ex. ALI TIA or other - Shop Performance evaluation - Mid Term or Semester exam - Stations assignment completion - ASE Tasks performed |
|  | 1 | Research vehicle service information such as fluid type internal combustion engine operation, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced driver assistance systems (ADAS). | ASE Tech P-1;  RI.1.D, RI.3.D, W.1.A | **Workplace Skills:** Communication, Planning, Organizing & Management |
|  | 2 | Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed. | ASE Tech P-1; RI.3.D, W.3.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 3 | Verify operation of the instrument panel engine warning indicators. | ASE Tech P-1; RI.1.C | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 4 | Inspect engine assembly for fuel, oil, coolant, and other leaks. | ASE Tech P-1 | **Technical Skills:** Job-Specific Skills |
|  | 5 | Install engine covers using gaskets, seals, and sealers as required. | ASE Tech P-1 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Demonstrate understanding of the procedure for verifying engine mechanical timing. | ASE Tech P-2; RI.1.A-D, W.1.A | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Inspect engine mounts. | ASE Tech P-2 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8 | Identify service precautions related to service of the internal combustion engine of a hybrid electric vehicle. | ASE Tech P-2; RI.1.A-D, W.1.A | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
| **B** | **Cylinder Head & Valve Train** | |  |  |
|  | 1 | Identify cylinder head and valve train components and configurations. | ASE Tech P-1; RI.1.A-D, W.1.A | **Technical Skills:** Job-Specific Skills |
| **C** | **Engine Block Assembly** | |  |  |
|  | 1 | Identify engine block assembly components and configurations. | ASE Tech P-1; RI.1.A-D, W.1.A | **Technical Skills:** Job-Specific Skills |
| **D** | **Lubrication & Cooling Systems** | |  |  |
|  | 1 | Identify lubrication and cooling system components and configurations. | ASE Tech P-1; RI.1.A-D, W.1.A | **Technical Skills:** Job-Specific Skills |
|  | 2 | Perform engine oil and filter change: use proper fluid type per manufacturer specification; reset maintenance reminder as required. | ASE Tech P-1 | **Workplace Skills:** Decision Making, Planning, Organizing & Management  **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills, Safety & Health |
|  | 3 | Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, heater core, and galley plugs. | ASE Tech P-1 | **Workplace Skills:** Decision Making, Planning, Organizing & Management  **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills, Safety & Health |
|  | 4 | Identify causes of engine overheating. | ASE Tech P-2; RI.1.A-D, W.1.A | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills |
|  | 5 | Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment. | ASE Tech P-1 | **Technical Skills:** Job-Specific Skills |
|  | 6 | Inspect and test coolant; drain and recover coolant; flush and/or refill cooling system; use proper fluid type per manufacturer specification; bleed air as required. | ASE Tech P-1 | **Workplace Skills:** Decision Making, Planning, Organizing & Management**Technical Skills:** Computer & Technology Literacy, Job-Specific Skills, Safety & Health |
|  | 7 | Identify type of water pumps (belt driven, chain driven, and electric). | ASE Tech P-3; RI.1.A-D, W.1.A | **Technical Skills:** Job-Specific Skills |
|  | 8 | Remove, inspect, and replace thermostat and gasket/seal. | ASE Tech P-1 | **Technical Skills:** Job-Specific Skills |
| **II - Automatic Transmission & Transaxles** | | |  |  |
| **A** | **General** | |  |  |
|  | 1 | Research vehicle service information such as fluid type vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced driver assistance systems(ADAS). | ASE Tech P-1;  W.1.A | **Workplace Skills:** Communication, Planning, Organizing & Management |
|  | 2 | Identify automatic transmission and transaxle components and configurations. | ASE Tech P-1;  RI.1.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 3 | Retrieve and record DTCs OBD monitor status and freeze frame data; clear codes and data when directed. | ASE Tech P-1;  W.3.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 4 | Inspect transmission fluid condition; check fluid level; inspect for leaks on transmission or transaxle equipped with a dipstick. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills |
|  | 5 | Inspect transmission fluid condition; check fluid level; inspect for leaks on transmission or transaxle not equipped with a dipstick. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills |
|  | 6 | Demonstrate knowledge of transmission/transaxle gear reduction/multiplication concerns using driving, driven, and held member (power flow) principles. | ASE Tech P-1;  RI.1.A-C; A1.IF.B.3-6, A1.NQ.B.3-5, G.C.B, G.GMD.B.3&4, G.MG.A | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Demonstrate knowledge of pressure concerns in a transmission using hydraulic principles (Pascal’s Law). | ASE Tech P-2;  RI.1.A-D, W.1.A | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **B** | **Powertrain Components** | |  |  |
|  | 1 | Inspect external manual valve shift linkage, transmission range sensor/switch, and/or park/neutral position switch. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Drain and replace fluid and filter(s); use proper fluid type per manufacturer specification. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Demonstrate understanding of relearn procedures. | ASE Tech P-2;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Inspect, replace and/or align powertrain mounts. | ASE Tech P-1;  RI.1.A-D, W.1.A | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **C** | **Transmission Types** | |  |  |
|  | 1 | Describe the operational characteristics of continuously variable transmission (CVT). | ASE Tech P-1; SL.2.C | **Workplace Skills:** Communication**Technical Skills:** Job-Specific Skills |
|  | 2 | Describe the operational characteristics of a hybrid vehicle drivetrain. | ASE Tech P-1;  SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
| **III - Manual Drivetrain & Axles** | | |  |  |
| **A** | **General** | |  |  |
|  | 1 | Research vehicle service information such as fluid type internal combustion engine operation, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced driver assistance systems (ADAS). | ASE Tech P-1;  W.1.A | **Workplace Skills:** Communication, Planning, Organizing & Management |
|  | 2 | Identify manual drivetrain and axles components and configurations. | ASE Tech P-1;  RI.1.A-D, W.1.A | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 3 | Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed. | ASE Tech P-1;  W.2.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 4 | Check fluid condition; check for leaks. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills |
|  | 5 | Drain and refill manual/transaxle; use proper fluid type per manufacturer specification. | ASE Tech P-1;  A1.DS.A.8, A2.DS.A.7 | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **B** | **Clutch Master Cylinder Fluid** | |  |  |
|  | 1 | Check and adjust clutch master cylinder fluid level: check for leaks; use proper fluid type per manufacturer specification. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills |
| **C** | **Electronically Controlled Systems** | |  |  |
|  | 1 | Describe the operational characteristics of an electronically controlled manual transmission/ transaxle. | ASE Tech P-3;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **D** | **Installation and Replacement** | |  |  |
|  | 1 | Inspect and/or remove/replace bearings, hubs, and seals. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Inspect and/or service/replace shafts, yokes, boots, and universal/CV joints. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills |
| **E** | **Differential Housing** | |  |  |
|  | 1.1 | Inspect differential housing; check for leaks; inspect housing vent. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills |
|  | 1.2 | Check and adjust differential housing fluid level; use proper fluid type per manufacturer specification. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 1.3 | Drain and refill differential housing; using proper fluid type per manufacturer specification. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2.1 | Inspect and replace drive axle wheel studs. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **F** | **Tire Ratios** | |  |  |
|  | 1 | Identify concerns related to variations in tire circumference and/or final drive ratios. | ASE Tech P-2;  RI.1.A-D, W.1.A; A1.IF.B.3-6, A1.NQ.B.3-5, G.C.B, G.GMD.B.3&4, G.MG.A | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
| **IV - Suspension & Steering** | | |  |  |
| **A** | **General** | |  |  |
|  | 1 | Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced drer assistance systems (ADAS). | ASE Tech P-1;  W.1.A | **Workplace Skills:** Communication, Planning, Organizing & Management |
|  | 2 | Identify suspension and steering system components and configurations. | ASE Tech P-1;  RI.1.C, W.1.A | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 3 | Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed. | ASE Tech P-1;  W.2.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 4 | Identify and explain how to disable and enable supplemental restraint system (SRS); verify indicator lamp operation. | ASE Tech P-1;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
| **B** | **Power Steering** | |  |  |
|  | 1 | Inspect rack and pinion steering gear tie rod ends (sockets) and bellows boots. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Inspect power steering fluid level and condition. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Drain and replace power steering system fluid; use proper fluid type per manufacturer specification. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Inspect for power steering fluid leakage. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Remove, inspect, replace, and/or adjust power steering pump drive belt. | ASE Tech P-2;  A1.NQ.B.3-5 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Inspect, remove, and/or replace power steering hoses and fittings. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Inspect pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8 | Inspect tie rod ends (sockets), tie rod sleeves, and clamps (non-rack and pinion). | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 9 | Inspect and test electric power steering system. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **C** | **Joints and Mounts** | |  |  |
|  | 1 | Inspect upper and/or lower control arms, bushings, and shafts. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Inspect and replace rebound/jounce bumpers. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Inspect track bar, strut rods/radius arms, and related mounts and bushings. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Inspect lower ball joints (with or without wear indicators). | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Inspect suspension system coil springs and spring insulators. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Inspect torsion bars and mounts. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7.1 | Inspect front/rear stabilizer bar (sway bar) bushings, brackets, and links. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7.2 | Replace front/rear stabilizer bar (sway bar) bushings, brackets, and links. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8.1 | Inspect strut assembly, strut coil spring, insulators, and upper strut bearing mount. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8.2 | Remove and/or replace strut assembly, strut coil spring, insulators, and upper strut bearing mount. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 9 | Inspect components of suspension systems (Coil, Leaf, and Torsion). | ASE Tech P-1;  A1.NQ.B.3-5 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 10 | Inspect components of electronically controlled suspension systems. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **D** | **Electronically Controlled Systems** | |  |  |
|  | 1 | Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Inspect front and rear wheel bearings. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Describe the function of electronically controlled suspension and steering systems and components, (i.e., active suspension and stability control). | ASE Tech P-2;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **E** | **Alignment** | |  |  |
|  | 1 | Perform pre-alignment inspection; measure vehicle ride height. | ASE Tech P-1;  A1.NQ.B.3-5 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Describe four-wheel alignment angles (camber, caster, and toe) and effects on vehicle handling\tire wear. | ASE Tech P-1;  RI.1.A-D, SL.2.C; A1.NQ.B.3-5, G.CO.A.4&5, G.GMD.B.3&4, G.MG.A, G.SRT.A.2 | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **F** | **Tires** |  |  |  |
|  | 1 | Inspect tire condition/age; identify tire wear patterns; check for correct tire size, application (service-class, load, and speed ratings), and air pressure as listed on the tire information placard/label. | ASE Tech P-1;  A1.NQ.B.3-5 | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 2 | Rotate tires according to manufacturer’s recommendation including vehicles equipped with tire pressure monitoring system (TPMS). | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Dismount, inspect, and remount tire on wheel (with/without TPMS); balance wheel and tire assembly. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Inspect tire and wheel assembly for air loss; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Repair tire following tire manufacturer approved procedure. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Identify indirect and direct tire pressure monitoring systems (TPMS); calibrate/relearn system; verify operation of instrument panel lamps. | ASE Tech P-1;  RI.1.A-D, A1.NQ.B.3-5 | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 7 | Demonstrate knowledge of steps required to remove and replace sensors (per OEM/sensor manufacturer) in a tire pressure monitoring system (TPMS). | ASE Tech P-1; RI.1.A-D | **Workplace Skills:** Communication, Decision Making**Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8 | Perform Road Force balance/match mounting. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **V - Brakes** | |  |  |  |
| **A** | **General** | |  |  |
|  | 1 | Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced drer assistance systems (ADAS). | ASE Tech P-1;  W.1.A | Workplace Skills: Communication, Planning, Organizing & Management |
|  | 2 | Identify brake system components and configurations. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 3 | Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed. | ASE Tech P-1;  W.2.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 4 | Describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS). | ASE Tech P-1;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Install wheel and torque lug nuts. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **B** | **Fluids** | |  |  |
|  | 1 | Explain pressure concerns in the brake system using hydraulic principles (Pascal’s Law). | ASE Tech P-1;  RI.1.A-D, SL.2.C; A1.CED.A.3&4, A1.NQ.B.3-5, A1.SSE.A.1 | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Inspect brake pedal height, travel, and free play (as applicable). | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Check master cylinder for internal/external leaks and proper operation; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills |
|  | 4 | Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, and loose fittings/supports; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills |
|  | 5 | Select, handle, store, and fill brake fluids to proper level; use proper fluid type per manufacturer specification. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Identify components of hydraulic brake warning light system. | ASE Tech P-3;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 7 | Bleed and/or replace fluid in the brake system. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8 | Test brake fluid for contamination. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **C** | **Drums and Cylinders** | |  |  |
|  | 1 | Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Explain how to refinish brake drum and measure final drum diameter; compare with specification. | ASE Tech P-3; RI.1.A-D, SL.2.C; A1.NQ.B.3-5 | **Workplace Skills:** Communication**Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Inspect wheel cylinders for leaks and proper operation; remove and replace as needed. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills |
|  | 5 | Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; perform final checks and adjustments. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **D** | **Calipers and Rotors** | |  |  |
|  | 1 | Remove and clean caliper assembly; inspect for leaks, damage, and wear; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills |
|  | 2 | Inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Remove, inspect, and/or replace brake pads and retaining hardware; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads against rotor; inspect for leaks. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Clean and inspect rotor and mounting surface; measure rotor thickness, thickness variation, and lateral runout; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Remove and reinstall/replace rotor. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Refinish rotor on vehicle; measure final rotor thickness and compare with specification. | ASE Tech P-3;  A1.NQ.B.3-5 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8 | Refinish rotor off vehicle; measure final rotor thickness and compare with specification. | ASE Tech P-3;  A1.NQ.B.3-5 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 9 | Retract and re-adjust caliper piston on an integrated parking brake system. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 10 | Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer’s recommendation. | ASE Tech P-2;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **E** | **Power Booster** | |  |  |
|  | 1 | Check brake pedal travel with and without engine running to verify proper power booster operation. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Identify components of the brake power assist system (vacuum/ hydraulic/electric). | ASE Tech P-2;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
| **F** | **Operation** | |  |  |
|  | 1 | Remove, clean, inspect, repack/replace, and install wheel bearings; remove and install bearing races; replace seals; install hub and adjust bearings. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Check parking brake operation (including electric parking brakes); check parking brake indicator light system operation; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Check operation of brake stop light system. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Inspect and replace wheel studs. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **G** | **Electronically Controlled Systems** | |  |  |
|  | 1 | Identify and inspect electronic brake control system components and describe function (ABS, TCS, ESC); determine needed action. | ASE Tech P-2;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills |
|  | 2 | Describe the operation of a regenerative braking system. | ASE Tech P-3;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **VI - Electrical/Electronic Systems** | | |  |  |
| **A** | **General** | |  |  |
|  | 1 | Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced drer assistance systems (ADAS). | ASE Tech P-1;  W.1.A | **Workplace Skills:** Communication, Planning, Organizing & Management |
|  | 2 | Identify electrical/electronic system components and configurations. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed. | ASE Tech P-1;  W.3.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 4 | Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm’s Law). | ASE Tech P-1;  RI.1.A-D; A1.IF.B.3-6, A1.NQ.B.3-5, A1.REI.A.1, A2.IF.A | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow and resistance. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Describe types of test lights; use appropriate test light to check operation of electrical circuits as directed per service information. | ASE Tech P-2;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8 | Use fused jumper wires to check operation of electrical circuits per service information. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 9 | Use wiring diagrams during the diagnosis of electrical/electronic circuit problems. | ASE Tech P-1;  G.GMD.B.3&4 | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 10 | Diagnose the cause(s) of excessive key-off battery drain (parasitic draw); determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 11 | Inspect and test fusible links, circuit breakers, and fuses; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 12 | Inspect, test, repair, and/or replace components, connectors, terminals, harnesses, and wiring in electrical/electronic systems (including solder repairs); determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **B** | **Battery** | |  |  |
|  | 1 | Perform battery state-of-charge test; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Confirm proper battery capacity, size, type, and application for vehicle; perform battery capacity and load test; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Maintain or restore electronic memory functions as recommended by manufacturer. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Inspect and clean battery; fill battery cells (if applicable); check battery cables, connectors, clamps, and hold-downs. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Perform battery charging according to manufacturer’s recommendations. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery. | ASE Tech P-2;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
| **C** | **Starter** | |  |  |
|  | 1 | Perform starter current draw test; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Perform starter circuit voltage drop tests; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Inspect and test starter relays and solenoids; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Remove and install starter in a vehicle. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Inspect and test switches, connectors, and wires of starter control circuits; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Demonstrate knowledge of automatic idle-stop/start-stop system. | ASE Tech P-2;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **D** | **Alternator** | |  |  |
|  | 1 | Perform charging system output test; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Inspect, adjust, and/or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Remove, inspect, and/or replace generator (alternator); determine needed action. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Perform charging circuit voltage drop tests; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **E** | **Lamps** | |  |  |
|  | 1 | Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **F** | **Panel** |  |  |  |
|  | 1 | Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators as required. | ASE Tech P-1; | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
| **G** | **Other Systems** | |  |  |
|  | 1 | Explain vehicle comfort, convenience, access, safety, and related systems operation. | ASE Tech P-3;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Remove and reinstall door panel. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Explain operation of security/anti-theft systems and related circuits (such as: theft deterrent, door locks, remote keyless entry, remote start, and starter/fuel disable). | ASE Tech P-3;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Describe disabling and enabling procedures for supplemental restraint system (SRS); verify indicator lamp operation. | ASE Tech P-2;  RI.1.A-D, SL.2.C | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Verify windshield wiper and washer operation; replace wiper blades. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **VII - Heating, Ventilation & Air Conditioning (HVAC)** | | |  |  |
| **A** | **General** | |  |  |
|  | 1 | Research vehicle service information, including refrigerant/oil/fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced drer assistance systems (ADAS). | ASE Tech P-1;  W.1.A | **Workplace Skills:** Communication, Planning, Organizing & Management |
|  | 2 | Identify heating, ventilation, and air conditioning (HVAC) components and configurations. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 3 | Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed. | ASE Tech P-1;  W.3.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 4 | Perform A/C system performance test; interpret results; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Identify abnormal operating noises in the A/C system; determine needed action. | ASE Tech P-3;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Leak test A/C system; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Identify and interpret heating and air conditioning problems; determine needed action. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **B** | **A/C** |  |  |  |
|  | 1 | Inspect, remove, and/or replace A/C compressor drive belts, pulleys, and tensioners; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Inspect for proper A/C condenser airflow; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Inspect evaporator housing condensation drain; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **C** | **Ducting** | |  |  |
|  | 1 | Inspect engine cooling and heater systems hoses and pipes; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **D** | **Components** | |  |  |
|  | 1 | Inspect HVAC system ducts, doors, hoses, cabin filters, and outlets; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 2 | Identify the source of HVAC system odors. | ASE Tech P-2;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **E** | **Refrigerants** | |  |  |
|  | 1 | Demonstrate awareness of the need to recover, recycle, and handle refrigerants using proper equipment and procedures. | ASE Tech P-2;  RI.1.A-D | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **F** | **MACS** | |  |  |
|  | 609 | Earn ASE Refrigerant Recovery and Recycling Testing or equivalent certification. | MACS 609 | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **VIII - Engine Performance** | | |  |  |
| **A** | **General** | |  |  |
|  | 1 | Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced drer assistance systems (ADAS). | ASE Tech P-1;  W.1.A | **Workplace Skills:** Communication, Planning, Organizing & Management |
|  | 2 | Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed. | ASE Tech P-1;  W.3.A | **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills |
|  | 3 | Verify proper engine cooling system operation; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Demonstrate understanding of camshaft timing including engines equipped with variable valve timing (VVT) systems; determine needed action. | ASE Tech P-1;  RI.1.A-D, A1.NQ.B.3-5 | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
| **B** | **Electronically Controlled Systems** | |  |  |
|  | 1 | Identify computerized control system components and configurations. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
| **C** | **Ignition** | |  |  |
|  | 1 | Identify ignition system components and configurations. | ASE Tech P-1; RI.1.A-D | **Workplace Skills:** Communication**Technical Skills:** Job-Specific Skills |
|  | 2 | Remove and replace spark plugs; inspect secondary ignition components for wear and damage; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **D** | **Fuel** |  |  |  |
|  | 1 | Identify fuel, air induction, and exhaust system components and configurations. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 2 | Inspect and service fuel tanks, lines, and serviceable fuel filters. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | Inspect, service, or replace air filters, filter housings, and intake duct work. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 4 | Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine needed action. | ASE Tech P-1; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Check and refill diesel exhaust fluid (DEF). | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
| **E** | **Emissions** | |  |  |
|  | 1 | Identify emission control system components and configurations. | ASE Tech P-1;  RI.1.A-D | **Workplace Skills:** Communication  **Technical Skills:** Job-Specific Skills |
|  | 2 | Inspect, test, service, and/or replace positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses; determine needed action. | ASE Tech P-2; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 3 | MISSING |  |  |
|  | 4 | Diagnose emissions and drivability concerns caused by the exhaust gas recirculation (EGR) system; inspect, test, service and/or replace electrical/electronic sensors, controls, wiring, tubing, exhaust passages, vacuum/pressure controls, filters, and hoses of exhaust gas recirculation (EGR) system; determine needed action. | ASE Tech P-2; | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 5 | Inspect and test electrical/electronically operated components and circuits of secondary air injection systems; determine needed action. | ASE Tech P-3; | **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 6 | Diagnose emissions and drivability concerns caused by catalytic converter system; determine needed action. | ASE Tech P-1; | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 7 | Diagnose emissions and drivability concerns caused by the evaporative emissions control (EVAP) system; determine needed action. | ASE Tech P-1; | **Workplace Skills:** Communication, Decision Making  **Technical Skills:** Job-Specific Skills, Safety & Health |
|  | 8 | Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems; determine needed action. | ASE Tech P-1; RI.1.C | **Workplace Skills:** Communication, Decision Making**Technical Skills:** Job-Specific Skills, Safety & Health |
| **Workplace Skills** *(to be integrated throughout the program)* | | |  |  |  |  |
| **A** | **Employability** | |  |  |  |  |
| **NOTES** | | *Personal Standards (see Standard 7.7) All training activities and instructional material should emphasize the importance of maintaining high personal standards. While these skills should be integrated in instruction, they are not required to be individually measured by student for the purposes of program accreditation. The classroom/lab can be considered the equivalent of a workplace and classmates can be considered coworkers.* | | | | |
|
|
|  | 1 | Reports to work daily on time; able to take directions and motivated to accomplish the task at hand. | See Notes Above | **Personal Skills:** Integrity, Work Ethic, Professionalism, Responsibility, Adaptability/Flexibility, Self-Motivation | **Classroom and Lab Activity:** (*Recommended programs to introduce*) - Skills USA Framework - SP2  - CCAR  - Human Resource Training  **Industry Connections:** - Field Trips  - Industry visits and presentations - Interviews  - Job shadow - Internships - Employment | **Work Ethic Performance Review** - Based on Skills USA Framework-17 Elements - Every Three Weeks - Peer/Team Review |
|  | 2 | Dresses appropriately and uses language and manners suitable for the workplace. |
|  | 3 | Maintains personal hygiene appropriate for the workplace. |
|  | 4 | Meets and maintains employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc. |
|  | 5 | Demonstrates honesty, integrity, and reliability. |
| **B** | **Work Habits/ Ethics** | |  |  |  |  |
| **NOTES** | | *Personal Standards (see Standard 7.8) The training program should be organized in such a manner that work habits and ethical practices required on the job are an integral part of the instruction. While these skills should be integrated in instruction, they are not required to be individually measured by student for the purposes of program accreditation. The classroom/lab can be considered a workplace and classmates can be considered coworkers.* | | | | |
|
|
|  | 1 | Complies with workplace policies/laws, including handling waste, hazardous materials, and proper removal (recycling). | RI.1.A-D, RI.3.B&D | **Personal Skills:** Integrity, Work Ethic, Professionalism, Responsibility, Adaptability/Flexibility, Self-Motivation  **Workplace Skills:** Communication, Decision Making, Teamwork, Multicultural Sensitivity & Awareness, Planning, Organizing & Management, Leadership  **Technical Skills:** Computer & Technology Literacy, Job-Specific Skills, Safety & Health, Service Orientation, Professional Development | **Classroom and Lab Activity:** (Recommended programs to introduce) - Skills USA Framework - SP2  - CCAR  - Human Resource Training  **Industry Connections:** - Field Trips  - Industry visits and presentations - Interviews  - Job shadow - Internships - Employment | **Work Ethic Performance Review** - Based on Skills USA Framework-17 Elements  - Every Three Weeks  - Peer/Team Review |
|  | 2 | Contributes to the success of the team, assists others and requests help when needed. | RI.1.B, SL.1.A |
|  | 3 | Works well with all customers and coworkers. | RI.1.B, SL.1.A, SL.2.A-C |
|  | 4 | Negotiates solutions to interpersonal and workplace conflicts. | SL.1.A, SL.2 |
|  | 5 | Contributes ideas and initiative. | SL.1.A-C |
|  | 6 | Follows directions. | RI.3.D |
|  | 7 | Communicates effectively, both in writing and verbally, with customers and coworkers. | SL.1, SL.2, W.2, W.3 |
|  | 8 | Reads and interprets workplace documents; writes clearly and concisely. | RI.1.A-D, RI.3.B, D; W.2.A, W.3.A |
|  | 9 | Analyzes and resolves problems that arise in completing assigned tasks. | SL.1.B |
|  | 10 | Organizes and implements a productive plan of work. | W.3.A |
|  | 11 | Uses scientific, technical, engineering and mathematics (STEM) principles and reasoning to accomplish assigned tasks. | A1.NQ.B.3-5, G.GMD.B.3&4, G.MG.A |
|  | 12 | Identifies and addresses the needs of all customers, providing helpful, courteous, and knowledgeable service and advice as needed. | SL.1.A-C |
|  | 13 | Respectful of tools and property used in school and workplace environment. |  |
|  | 14 | Contributes to an inclusive environment where every coworker and customer feels welcomed, heard, and valued. | SL.1.A-C |
| **Academic Skills** | | |  |  |  |  |
|  | **English/Language Arts** | |  |  |  |  |
|  | 1 | Draw conclusions to support analysis of what the text says explicitly as well as inferences drawn from the text, including where the text leaves matters uncertain. | RI.1.A | **Workplace Skills:** Communication | Included in lessons |  |
|  | 2 | Determine the meaning of words and phrases as they are used in context or reference materials. | RI.1.B |
|  | 3 | Interpret visual elements of a text including those from different media and draw conclusions from them (when applicable). | RI.1.C |
|  | 4 | Explain two or more central/main ideas in a text, analyze their development and provide an objective and concise summary. | RI.1.D |
|  | 5 | Synthesize information from two or more texts about similar ideas/topics to articulate the complexity of the issue. | RI.3.B |
|  | 6 | Read and comprehend informational text independently and proficiently. | RI.3.D |
|  | 7 | Work with peers to promote discussions and decision-making, set clear goals, and establish individual roles. Evaluate a speaker’s point of view by posing and responding to questions and evidence. Consider and respond thoughtfully to diverse perspectives. | SL.1.A-C |
|  | 8 | Speak audibly using conventions of language, eye contact, gestures, and movement appropriate to task, purpose and audience. | SL.2.A-C |
|  | 9 | Conduct research to answer a question or solve a problem using relevant information from multiple credible sources. | W.1.A |
|  | 10 | Follow a writing process to produce clear and coherent writing in which the development, organization, style, and voice are appropriate to the task, purpose and audience. | W.2.A |
|  | 11 | Review, revise, and edit writing with consideration for the task, purpose, and audience. | W.3.A |
|  | **Mathematics** | |  |  |  |  |
|  | 1 | Represent constraints by equations or inequalities, interpret data points in a modeling context, and solve equations and formulas for a specified variable. | A1.CED.A.3&4 | **Workplace Skills:** Planning, Organizing, & Management  **Technical Skills:** Computer & Technology Literacy | Included in lessons |  |
|  | 2 | Distinguish between correlation and causation. | A1.DS.A.8 |
|  | 3 | Using tables, graphs, and verbal descriptions, interpret the relationship between two quantities, the rate of change over time, and the parameters in terms of context. | A1.IF.B.3-6 |
|  | 4 | Use units of measure to solve problems involving quantities using appropriate units and labels, converting units and rates, using graphical representation as needed. | A1.NQ.B.3-5 |
|  | 5 | Explain how each step taken when solving an equation or inequality in one variable creates an equivalent equation or inequality that has the same solution(s) as the original. | A1.REI.A.1 |
|  | 6 | Interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions. | A1.SSE.A.1 |
|  | 7 | Evaluate reports based on data. | A2.DS.A.7 |
|  | 8 | Identify and interpret key characteristics of functions represented graphically, with tables and with algebraic symbolism to solve problems. | A2.IF.A |
|  | 9 | Derive the formula for the length, area, and arc of a circle. | G.C.B |
|  | 10 | Develop definitions of rotations, reflections and translations in terms of angles, circles, perpendicular lines, parallel lines and line segments. | G.CO.A.4 |
|  | 11 | Demonstrate the ability to rotate, reflect or translate a figure, and determine a possible sequence of transformations between two congruent figures. | G.CO.A.5 |
|  | 12 | Identify the shapes of two-dimensional cross-sections of three-dimensional objects. | G.GMD.B.3 |
|  | 13 | Identify three-dimensional objects generated by transformations of two-dimensional objects. | G.GMD.B.4 |
|  | 14 | Use geometric shapes, their measures and their properties to describe objects in terms of using density, area, volume using mathematical modeling. | G.MG.A |
|  | 15 | Use the definition of similarity to decide if figures are similar and to solve problems involving similar figures. | G.SRT.A.2 |
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